

WAUCONDA SCHOOL DISTRICT 118

UNIT PLANNING ORGANIZER

Subject: Science

Grade Level or Course: 7th Grade

Unit: Microbiology Unit 4

Pacing: 4 Weeks (Quarter 2)

STAGE 1 – DESIRED RESULTS

Essential Questions: (What will students take away from this unit, not necessarily on an assessment)

1. How can something so small have such a significant impact on our lives?
2. Are microorganisms helpful or harmful to other organisms and the environment?
3. What can be done if I am infected with a communicable disease? What can I do to prevent myself from getting a communicable disease?
4. NGSS: How can one explain the ways cells contribute to the function of living organisms?
5. NGSS: How does a system of living and non-living things operate to meet the needs of the organisms in an ecosystem?

Big Ideas: (Discipline specific goals that help to answer the essential question)

1. Our knowledge of microorganisms is directly related to the continued technological advancement of microscopes.
2. Viruses are non-living and must act as parasites during the lytic cycle to reproduce using living cells as hosts.
3. Decomposers such as fungi and bacteria are Earth's natural recyclers of matter and directly or indirectly impact the ecosystem.
4. Antibiotics are used to treat infections caused by living organisms (bacteria, protists, fungi), and vaccines are used to prevent viral infections.
5. Most microorganisms are helpful to other organisms and the environment.
6. Although harmful microorganisms are everywhere, there are important steps that can be taken to avoid infections through proper hygiene and cleaning procedures.

NGSS (Priority Standards):

MS-LS1-1
MS-LS1-2
MS-LS1-3
MS-LS1-5
MS-LS1-6
MS-LS1-7
MS-LS2-1
MS-LS2-2

MS-LS2-3

MS-LS2-4

MS-LS2-5

MS-LS3-2

MS-LS4-1

MS-LS4-2

MS-LS4-5

MS-ETS1-1

MS-ETS1-3

Nature of Science Practices: *Scientific Investigations Use a Variety of Methods, Scientific Knowledge is Based on Empirical Evidence, Scientific Knowledge is Open to Revision in Light of New Evidence, Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena.*

Nature of Science Cross-Cutting Concepts: *Science is a Way of Knowing, Scientific Knowledge Assumes an Order and Consistency in Natural Systems, Science is a Human Endeavor, Science Addresses Questions About the Natural and Material World.*

CCSS (Supporting Standards):

STAGE 2 – EVIDENCE

Concepts (What students need to know)	Performance Tasks (What students will be able to do)	DOK Blooms
1. The Development of the Microscope 2. Viruses are non-living 3. Lytic cycle 4. Viruses can be harmful and helpful 5. Characteristics of Kingdoms Archaeobacteria and Eubacteria 6. Bacteria can be harmful or helpful 7. Characteristics of Kingdom Protista 8. Protists can be harmful or helpful 9. Characteristics of Kingdom Fungi 10. Fungi can be harmful or helpful 11. Decomposition and the carbon cycle 12. Transfer of energy in ecosystems. 13. History of antibiotics and vaccines 14. Communicable vs Non-Communicable Diseases	1. Identify the structures of a typical virus 2. Draw and label a diagram of the lytic cycle 3. Give examples of the harmful and helpful effects of viruses 4. Compare and contrast the characteristics of archaeobacteria and eubacteria 5. Classify bacteria according to their basic shapes 6. Identify the basic structures and describe the functions of a typical bacteria cell 7. Compute the rate of bacterial reproduction 8. Give examples of the harmful and helpful effects of bacteria 9. Study the life cycle of a fungus through spore dispersal 10. Dissect a fungi specimen to identify its major structures 11. Give examples of the harmful and helpful effects of fungi 12. Explain the roles bacteria and fungi have in decomposition and the carbon cycle 13. Differentiate between the 3 groups of protists based on their characteristics 14. Give examples of the	

	harmful and helpful effects of protists 15. Explain the role Alexander Fleming played in the discovery of antibiotics and vaccines 16. Research an infectious disease in order to apply knowledge of microorganisms	
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STAGE 3 – LEARNING PLAN (INSTRUCTIONAL PLANNING)

Suggested Resources/Materials/Informational Texts

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Suggested Research-based Effective Instructional Strategies

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Academic Vocabulary/ Word Wall	Enrichment/Extensions/ Modifications	Interdisciplinary Connection
Essential Vocabulary: Virus host parasite lytic cycle protein coat genetic material bacteria Archaeobacteria Eubacteria carbon cycle decomposition Protista pseudopod flagella cilia Fungi		

hyphae fruiting bodies spore antibiotics vaccination Alexander Fleming (scientist)		
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Worth-knowing Vocabulary:

food chains
food web
consumer
producer
population
quadrant sampling technique
communicable (infectious) disease
non-communicable disease
bacteriophage
active virus
hidden virus